Marshall Magruder
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17 April 2004

Mr. Raymond T. Williamson
EPS Workshop Chairman
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Re: Environmental Portfolio Standard Change Workshop 3, held 16 April 2004 at ACC Offices, Tucson, Arizona.

As indicated in our discussions yesterday, I'm enclosing a very slightly modified copy of yesterday's handout with typos removed, a few key words "bolded", and two short sentences added from the oral presentation. (Attachment 1)

I've also attached an additional copy of the *Transmission & Distribution World* article, referenced in footnote 2. (Attachment 2)

I would like to add an additional **recommendation** to shift from "EPS Percentages" to MegaWatts (MWs) of electric energy, as was used in the Western Governors Association handout.

Please free to call or request additional information as this topic or additional information about the recommendations, as this topic is critical for long-term reliable, efficient, cost-effective electricity.

Sincerely,

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Attachments:
1. Marshall Magruder letter to the Environmental Portfolio Standard Change Workshop Three of 16 April 2004.
2. *Transmission & Distribution World,* "Mega Load Management System Pays Dividends – FPL and customers benefit from demand-side management program. Customers are paid to participate, while utility meets peak load without resorting to new generation", February, 2004. (www.tdworld.com)
3. Copy of my letters to the Commissioners on this subject

Marshall Magruder
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April 16, 2004

BEFORE THE ARIZONA CORPORATION COMMISSION

Chairman Marc Spitzer
Commissioner William A. Mundell
Commissioner Jeff Hatch-Miller
Commissioner Mike Gleason
Commissioner Kristin Mayes
EPS Workshop Chairman Ray T. Williamson
1200 West Washington Street, Phoenix, AZ 85700

Re: Environmental Portfolio Standard Change Workshop 3, "Notice of Special Open Meeting" Agenda for April 16, 2004

Summary. This letter provides public comments for the issues listed in the referent Agenda:

1. Portfolio Percentage

Whether or not Arizona can and should increase its commitment to renewable energy by increasing the portfolio percentage?

The present EPS percentage of 1.1% is much less adjacent states and the national average for states with an EPS or equivalent renewable energy standard. The highest is Maine at 30%. The Governor of California is pushing for 33%. The need to more diverse, distributed, and renewable energy is well documented and is essential for future growth in the Great State of Arizona.[1]

The present 0.8% to 1.1% portfolio standard encourages instead of discouraging, further development of non-renewable energy fuel sources, namely coal and natural gas generation plants.

Recommend the portfolio percentage be gradually increased to 15% over a period fourteen years as follows:

- In **2008**, to increase from **1.1% to 2.0%.**
- In **2009**, to increase from **2.0% to 3.0%** and, then **1.0% annually** through **2021 to 15.0%.**

The A.A.C. R14-2-1618B.3 EPS process has to be modified, staring in 2008, with monetary bonus incentives developed when accomplishments exceed and penalties for failure to achieve the standard.

2. Expiration Date

Elimination of the Environmental Portfolio Standard expiration date?

[1] See *Cost, Benefits, and Impacts of the Arizona Environmental Portfolio Standard,* by the ACC Cost Evaluation Working Group, June 30, 2003, with benefits discussed in Section IV and Appendix 2.

The present expiration date impedes the utility industry to invest in long-term projects to support this program or to leverage their EPS funds to capitalized additional benefits for its customers.

Recommend the expiration date be changed to **2025**, and automatically renewed, unless contested, for an additional five-years in 2015 and 2020, thus extending to **2035**. This should permit confidence and reduce financial long-term risks due to possible reduction of this program.

3. Technology & Mix

Consideration of inclusion of new and emerging technologies as part of the review of the appropriate resource mixes.

The long-term future of energy solutions appears to be mostly hydrogen-centric oriented; however, there are many implementation steps that may impede this energy source. Other technologies, involving known and unknown solutions, need to be considered. The only technological solutions that should not be considered involve coal, natural gas, or nuclear energy sources.

Recommend no restrictions be placed the technology mix.

Allocation of funding among various technologies.

Arizona, by all measures, is the best state for solar energy. The average home receives eight times is energy demands on its roof. The utility infrastructure is minimized for solar electricity generation systems. The utility infrastructure does provide a backup power source, and is necessary when a solar system does not have a storage capability. In addition to electricity generation, solar hot water heaters, can reduce between 20-35% of the average home's energy needs, and needs to be encouraged due to the rapid return on investment for homeowners.

Recommend the present 60% or greater allocation towards solar energy devices is continued with additional interest towards solar water heaters. It is further recommended that the following goals be established:

By **2012**, over **500,000 solar water-heating systems** are installed in Arizona
By **2017**, over **1,000,000 solar water-heating systems** are installed in Arizona
By **2021**, over **2,000,000 solar water-heating systems** are installed in Arizona
[This can reduce demand by 500 MW, at least one 500 MW powerplant]

By **2012**, over **100,000 solar electricity generation systems** are installed in Arizona
By **2017**, over **500,000 solar electricity generation systems** are installed in Arizona
By **2021**, over **1,000,000 solar electricity generation systems** are installed in Arizona.
[This can reduce demand at least 2,000 MW or five 400 MW powerplants, siting, transmission lines, with pollution health threats and save over $2 billion in capital expenses with reduce O&M]

Review of whether the approach of static percentages is still justified and if so, whether those percentages should be reconfigured, in the phase-in section of the rules in A.A.C. R14-2-1618B.3.

See above for phase in dates, which need to be allocated to service areas, based of its customers, by rate category. If an utility fails to meet its quota, then if will have its rates reduced by the percentage it failed to make its quota, if it exceeds its percentage by 2%, for the above dates, then for every additional two percent above its "quota" percent, it will be given a 1% bonus for next five

years. This pertains to both solar water heating and solar electricity generation systems, by customer categories such as residential, business, industrial and municipal streetlights.

Example, in 2017, the utility service area should have 10% solar water-heaters, 5% electricity generation systems and 11% had solar water-heating systems, and 9% had electricity generation systems. There would be a 2% increase in electricity rates, as water heaters were 11-10, less than 2% or no impact and solar electric systems were 3% above goal, thus allowing a 0.5 % automatic rate increase for five years (next EPS goal line) as profit for achieving the goal.

4. Funding Issues

A discussion of increasing the Environmental Portfolio Standard funding levels.

The present system of funding does not encourage distributed generation nor does the EPS funding scheme encourage residential, business, or industrial customers to invest in ownership of energy generation devices. The primary benefactors are the utilities, who have demonstrated this by large, centralized, solar "power plants" from their century of such experiences. The paradigm shift and transformation of this industry towards renewable, distributed energy sources has not been accepted by the major utilities in Arizona. For example, TEP has less than 100 photovoltaic systems (total 160 kW in TEP's areas of responsibility while is has used EPS funds primarily for its single 3,800 kW "solar plant".

Recommend funding shift from the utilities to ratepayers after 2008. The EPS surcharge should aid both initial investment and operations. Initial investment incentives include tax credits and other incentives, such as in the following Arizona legislature bills, which have passed the House and are waiting approval by the Senate:

AB2613 Increases solar energy credits to $5000 for individuals and to $25,000 for businesses
AB2526 Provides property tax reductions for businesses with over 10% solar energy devices
Ab2527 Provides for solar and renewable energy sources for Arizona schools
AB2528 Requires energy audits every 12-years for state buildings and cost/benefits analyses.

Recommend the Commission encourage the Arizona Senate to strongly consider passage of all four of these to provide ratepayer tax credits, conserve Arizona school operations and maintenance funds, promote business usage of solar energy devices, and audit all Arizona state buildings. These bills incentivize capital investment for all customer categories throughout the state, including schools and state-operated facilities.

Recommend true net metering be required throughout the state for renewable energy generation, whenever the fuel source is other than coal, natural gas, or any petroleum product and the fuel is compliant with all environmental regulations, such as clean air and water statutes. True net metering will benefit the small-distributed generation system owners by having the utility purchase, at its retail rate for that customer category, and sell at the same monetary value. NO additional surcharges will be permitted for systems smaller than 50 kW.

Whether or not Arizona can and should increase its commitment to renewable energy by increasing the surcharge?

The state should increase its commitment to renewable energy; however, increasing the EPS surcharge will not incentivize the required direction needed to make advances in renewable energy. The proposed AB2613 tax credit incentive, plus potential federal tax credits, should motivate most new homeowners and businesses that incorporation of both solar water-heating and electricity

generation during initial construction is when such investments are best made. Carrying the cost in one's mortgage with lower utility bills for decades is another monetary incentive.

Recommend shifting funding emphasis of the EPS surcharge towards customer installations. As shown in various reports, the utilities centralized "solar" power plants and other means will never achieve meaningful results necessary to achieve the above EPS percentages. In view of a decrease in new utility infrastructure requirements, extensive savings in capital investments will result.

Recommend that monetary incentives be developed for customer installations to account for the numerous other incentives used in the utility industry including interest-free loans, guaranteed ROI, tax credits, valuations at 25% market value for property tax that are not available to residential, business, industrial or governmental customers. Such incentives could be to establish low-interest EPS loan programs, low down payments, customer and contractor training and educational programs, bulk-purchases, and many others. The Commission could use the utility or another entity to manage these incentives.

Recommend utilities be required to leverage all EPS funds, with at least a 1:5 ratio of EPS funds received to long-term loans. With this program continuing for decades, this will permit payback over the life-cycle of EPS energy devices. These public service utilities will monitor all renewable energy projects in its service area for compliance with the appropriate IEEE or other design standards to ensure conformance with standard interconnection devices.

Recommend the ACC Staff establish standard distributed generation interconnections for use by all utilities throughout the state. Such interconnection standards are critical for builders, electricity industry workers, utilities, and are necessary to facilitate all renewable additions to the state's energy grid. Further, the ACC Staff should establish a simple, one-step process for interconnecting to promote interoperability and facilitate distributed generation.

Restoration of Demand Side Management funding.

A Demand Side Management (DSM) program has one goal: to reduce demand, primarily shift demand from "peak" to "off-peak" hours. DSM is NOT a conservation program nor is DSM an efficiency program. These two are very important but are not realistic candidates for DSM funding.

There are many ways to accomplish DSM. A recent article[2] indicated that 7/8th of the customer's volunteered to have a load management system, installed on their distribution panel, which permitted to utility to remotely control (1) air conditioning, (2) electric hot water heaters, and (3) pool equipment. The two-way control system even permitted an over-ride capability, which was used about 1.5%. For this, a customer credit of $6.00 for controlling air conditioners (up to five consecutive minutes off) and $3.50 for water heaters was shown on each month's bill. What were the resultant benefits for the utility? It **avoided building 10 new 400 MW power plants to "clip" peak loads**. There were NO other incentives provided by the State Utility Commission, such as DSM funding, because the utility made money by saving capital investment with this program.

The overall result of DSM will be fewer power plants, less transmission line requirements, and similar results found by the ESP program.

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[2] See *Transmission & Distribution World,* February 2004, "Mega Load Management System Pays Dividends: FPL and customers benefit for demand-side management program. Customers are paid to participate, while the utility meets peak load without resorting to new generation," by Michael Andreolas, FPL, pp. 33 to 37. Copy provided to Mr. Ernest Johnson, Utility Division Director during EPS Workshop Number 1.

Further, APS has a digital meter program which shows current usage. This is similar to the current miles/gallon meter in hybrid automobiles. Such modern, digital meters can show actual cost and total usage and cost since reset. This enhances conservation and energy efficiency while augmenting the above load management program.

A review of Semi-Annual DSM Reports in 2000 and 2001 submitted by Citizens, showed nearly non-compliance with "demand side management" since only bill fillers and a few energy audits were accomplished for over $200,000 in return. At that time, filings and data requests strongly recommended careful auditing of DSM program for real reductions in demand. Billing fillers are not DSM.

Recommend utilities strongly consider replace all analog meters with two-way digital meters on a long-term program; say ten years, with capital costs recovered during routine rate cases. With such meters, then aggressive DSM, energy efficiency, and conservation programs can be initiated, such as the one described above.

Recommend, when and if an RTO is established in or for Arizona, a continuously updated web-based display be developed that shows actual and forecast demand conditions. Use of current demand date should give the public awareness of the current status of the Arizona electricity system. The California ISO display at http://www.caiso.com/outlook.html (and its details at lower pages) will be essential for conservation and DSM.

Recommend DSM funding be only used to pay for achieving demand reductions in actual, measured loads. The scheme discussed below, provides incentive to flatten the demand curve. Measured monthly loading spread, for this purpose, will be determined by (1) Monthly Average Peak (max) Load determined by summing each day's Peak hourly demand, (2) Monthly Average Minimum Load determined by summing each day's Minimum hourly load, (3) Monthly Demand Spread as the difference between (1) and (2); (4) Ratio of this year's Peak-Min Demand Spread to the same month Peak-Min Demand Spread for that month of the prior year. If the ratio is less than 1.00, the Peak Demand Spread has been reduced, and if higher, Peak Demand Spread has increased.

For a monetary incentive, the rates can be increased 50% of a Demand Spread reduction, but increase by the ratio of any increase, during next rate case. Example: (from 1) Peak Daily Average 110 MW, (from 2) Minimum Daily Average was 62 MW. Difference (from 3) is 48 MW. Prior year was 50 MW. Ratio (from 4) is 48/50 = 96%. A 2% positive rate adjustment is credited for DSM consideration during next rate case. If the Ratio was 1.04, then a 4% rate debit adjustment could be made. The Commission would have an objective measure for DSM.

Recommend no additional funding be dedicated to DSM. If DSM funding is returned, recommend the ACC Staff or an outside contractor (under a performance incentive contract) monitors careful audits of all DSM expenditures.

Sincerely,

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